



Description of WO2005002991

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Result Page

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<Desc/Cims PAGE NUMBER 1>

Tablet donor invention is on a tablet donor to the single delivery of tablets directed, a comprising housing and into the housing insertable and therein bottom stroke limiter displaceable an inner part, existing from a TA biettenvorratsraum and a tablet output chute as well as a resetting feather/spring, which pushes away against the housing, for example against the soil of the film housing

With tablet donors of simplest construction opening and closing an expenditure opening are done via a flap or a slide, which becomes operated for example by hand. A sort of tablets is not here provided. Further dispensers with a mechanical mechanism which can be operated disposed in the donor housing are known, by whose stroke-limited misalignment within the donor housing expenditure off is delivered nung in the donor housing a released and a tablet for each stroke from the donor housing. In the EP-A-0 345 413 for example a tablet donor becomes described, at whom from an housing by inside pressure an actuating button, which is gungschaft connected over a central disposed Betatti with a slide, by a bottom off nung a single tablet outputted becomes

In the DE-U-296 01.693 a tablet donor becomes presented, who consists of a prismatic housing with open front surface and a lateral offset off nung in the bottom surface. Into the housing above an inner part is pushed in, existing from a slide and an actuating button, on federations by a connecting element, which form together a structural unit in the sense of an inner housing, in whose upper part the tablet underground storage is from. Through finger pressure on the upper part the operating gropes shifts this inner part, whereby the bottom by the soil off

<Desc/Cims PAGE NUMBER 2>

nung the housing moved becomes and a tablet releases. The displacement of the inner part becomes stroke-limited by a bar, which up-pushes with the Abwärtsbewege gung the inner part on the housing bottom, whereby an other downward movement becomes blocked

An important component of these tablet donors with mechanical Betatti gungsstäbe is a return spring, which repairs the original initial state after completion of the donation procedure. In the EP 0.831.035 B1 a tablet donor becomes described blattförmigen return spring ordered with one at the bottom of the inner part. This return spring becomes led into the tablet donor housing, within the housing taking place the unit of the inner part after the deformation of the inner part, so that the bottom surface of the housing is again tensioned. By reason of this return spring becomes after being digging the donation procedure inner part again into its initial position back. Inner part with the return spring of this tablet donor becomes that time from POM (polyoxymethylene according to DIN 7728 T1) made and is relationship moderate expensively. Corresponding experiments to replace the expensive POM by food narrow us the Tigere PP (polypropylene according to DIN 7728 T1 and DIN 600001 T1) failed so far because of the fact that the return spring loses its spring force with longer use and so that the insurance of operation of the tablet donor significantly reduced becomes.

On the basis of this state of the art it is object of the invention to develop with sparsweise from the EP 0.831.035 B1 known tablet donors so more other that with an inner part made from PP even with longer use the initial present elasticity of the return spring obtained remains, without creating thereby additional disadvantages as for example particularly increased manufacturing costs or an increase of the tablet danger of fracture.

The object poses becomes with the characterizing features of the claim 1 by the fact dissolved that that inner part from one opposite the material POM

<Desc/Cims PAGE NUMBER 3>

(Polyoxymethylene) less elastic material, for example from PP (Polypropylene) made is, and the return spring by a certain combination well tied from feather/spring forms feather/spring material and attachment place at the inner part fröhlich tigere leaving of the spring force prevented. The return spring can be tight here from the original material of the inner part made and direct at the inner part attachment if (moulded on) or it can from a material made different of the interior material be.

In order to secure the required stability against an early fatigue of the spring force, in particular during the feather/spring manufacturing from the interior material, the return spring is staff or blattförmig formed and fixed sees in the vicinity of the bottom surface of the going outer with an end lateral at the inner part after an embodiment of the invention. The free end supports itself against the soil of the flat housing off. By the lateral arrangement of the return spring the spring travel becomes and/or, its deflection and thus the spring load counter over known spring arrangements significant reduced. To the other stabilizing rung the return spring can this at least at an end two connected with one another angular disposed legs to each other exhibit, so that are effective at this end two spring elements.

After an other embodiment of the invention it is possible to fasten the two EN that staff or the blattförmig formed return spring to two opposite located lateral locations of the inner part so biased that its central portion before-curves downward and pushes this central portion away against the Bodenfläche of the housing. By this measure an other RH is cushioning the spring travel with advantage possible.

With a manufacture of the return spring from a material chenden of the interior material abwei and in the case of deviation of staff or the blattförmig Ausbildung an attachment at lateral parts of the inner part is not meaningful, there thereby the possible spectrum of usable spring elements strong einge

<Desc/Cims PAGE NUMBER 4>

became. Such spring elements between egg more ner lower stage-flat of the inner part and the bottom surface of the housing disposed are according to invention, whereby without any attachment whole can be done as required

Possible spring elements, which are here the recovery of the inner part used to become to be able, for example Cylinder feathers/springs from POM (polyoxymethylene), steel feathers/springs, foam material elements, Elements from a thermoplastic elastomer (TPE), in addition, others, here elastic materials and feather/spring forms mentioned are more selectable, if they are more insertable within the tablet donor for a recovery of the inner part more usable and

Other details, features and advantages of the invention result from the appended explanation of in the designs schematic darge provided embodiments

Show: Fig. 1 a tablet donor with return spring in teilezeichnungen ner side view to the state of the art, Fig. 1a inner part of the tablet donor of the Fig. 1 in a pre that opinion. Fig. 1 b inner part of the tablet donor of the Fig. 1 in a being tenansicht, Fig. 2 to 4 back stellfeder, Fig. fixed at a side wall of the inner housing 5 and 6 at opposite side walls of the inner part strengthened return springs,

<Desc/Cims PAGE NUMBER 5>

Fig. 7 and 8 a return spring with angled legs. Fig. 9 a return spring from several one on the other fixed circular sections. Fig. 10 a welded return spring from foreign material. Fig. 11 an upward bent paraboliforme return spring from foreign material. Fig. 12 to 17 between the bottom surface of the housing and the lower

The stage-flat inner part disposed return spring from foreign material.

In the subsequent described drawing figures some variations of most different feather/spring geometry, feather/spring materials and mounting options become shown. The better overview thereby in each case the same tablet donors than basis donors used became. Here 0,831,035 B1 known tablet donor concern out of the EP. The tablet donor 1 of the EP 0,831,035 B1 to the single delivery of tablets covers a prismatic housing 20 with a bottom opening 21 disposed in the bottom surface 22 and an open top surface 30. By this open top surface 30 bottom stroke limiter a displaceable inner part 10 is pushed in, existing from a preferably prismatic tablet underground storage 12 and a vertical aligned tablet output chute 13 conductible by the bottom opening 21 of the housing 20. With the displacement of the inner part 10 by finger pressure on the front surface 11 of the inner part 10, whereby the finger seizes by the here V-shaped recesses 23 of the housing side halves and inner part 10 presses downward, the bottom end of the tablet output chute 13 by the bottom opening 21 guided and a tablet are delivered downward. For the recovery of the inner part a return spring 14 disposed between the inner part 10 and the housing 20 serves 10 after the donation procedure

<Desc/Cims PAGE NUMBER >

In fig 1 is this from the EP 0,831,035 B1 known staff or blattformig formed return spring 14 with an end at the lower stage-flat 17 of the inner part 10 fixed and the free end supports itself on the bottom surface 22 of the housing 20 off. Since the distance between the stage-flat 17 and the bottom surface 22 and thus the length of the return spring is 14 large, it can men to the described disadvantages with use of PP as feather/spring material kom

In the figs 1a and 1b is that inner part 10 of the tablet donor 1 shown single to the better understanding. The geometry of the prismatic tablet donor 1 becomes more significant more recognizable thereby, and in particular is from the Fig. 1b that the return spring 14 connected integral with the stage-flat 1 and thus part of the inner part 10 are

In the figs 2 and 3 the attachment place for the return springs 14a, 14b from PP significant to the bottom surface 22 disposed is closer. In Fig. 2 a lateral recess 18 of the tablet output chute 13 became as attachment place selected, so that the return spring 14a downward pushes easily bevelled with its free end at the bottom surface 22 away. In Fig. 3 downward strengthening place still other displaced became, so that the return spring 14b is parallel 22 disposed to the bottom surface and pushes away the free end by means of a bar 14b' of the bottom surface 22. From particular advantage with this return spring 14b is their manufacture, since all parts are in end form direction and no cheek tool is required thus here.

In the figs 4 5, 6 is staff or the blattformig formed and return springs 14c, 14d biased in vicinity of the bottom surface 22 disposed, made from PP. In the Fig. 4 is the return spring 14c similar like the return spring 14a with an end at the recess 18 of the tablet output chute 13 fixed. By the bias it is before-curved however upward, so that itself the free end with a blunter angle at the bottom surface 22 off

<Desc/Cims PAGE NUMBER >

supports. In Fig. 5 and 6 is both ends of the return spring 14d at the inner part 10 so biased fixed that their central portion can push 14'd/nach unten away before-curved and on the bottom surface 22. The attachment of the left end of the return spring 14d became thereby in Fig. 5 by means of at the lateral wall 15 of the tablet output chute 13 disposed a bar 19 and in Fig. 6 a projected edge 18' of the recess. 18 expenditure for tablet of the pit 13 performed. The attachment of the other end of resetting feather/spring 14d became 10 made in both figs at the lateral wall 16 of the inner part 13

As other possible variant the return spring became by its formation with at least two legs strengthened in the figs 7 and 8. In Fig. 7 is the upper end of the return spring 14e at the lower stage-flat 17 of the interior partly 10 fixed. Downward the return spring 14e splits into two legs 14e' auf, which men now the support against the bottom surface 22 überneh. In Fig. 8 the return spring 14f splits 6 up over its whole length Rone bus-similar, whereby the upper tip of the so formed return spring 14f at the lower stage-flat 17 of the inner part pushes away 10 fixed and the lower tip against the bottom surface 22

In fig 9 is a return spring 14g shown, which consists of several connected with one another circular sections and also preferably from the interior material PP made can become. This spring is with two. Legs 14g' an of the lower stage-flat 17 of the inner part 10 fixed, while their bottom end, by a circular section, pushes formed away-pandiformly against the bottom surface 22. Due to its geometry this return spring 14g represents a high elastic alternative to the described staff or blattformigen return springs.

In the figs 10 to 15 return springs 14h to 14m shown are, those contrary to the described return springs 14 to 14g not out

<Desc/Cims PAGE NUMBER >

the interior material exist and direct at inner part 10 are moulded on, but they consist of a foreign material, which must become chend entspire 10 fixed at the inner part 10 necessary. In Fig. 10 is one staff or blattformige return spring 14h from the POM inserted, those better resilient opposite PP in similar manner as the known return spring 14 from the lower stage-flat 17 of the inner part 10. Bottom surface 22 is enough To the attachment at the stage-flat 17 this return spring 14h of the tablet underground storage 12 passed through by a bore in the stage-flat 17 is a gap and the sprag 14h' der Rückstelle of the 14h there welded remaining above the stage-flat 17. The return spring 14l of the Fig. 11 is also from the better resilient POM made. It is in such a way pushed in biased in the intermediate area between the lower stage-flat 17 of the inner part 10 and the soil flat 22 that it pushes with its two ends at the soil flat 22 away, during their curved central portion contact to the stage-flat 17 has

In the figs 12 to 17 are in same way as in Fig. 11 return springs 14l to 14m from different materials into the space between the lower stage-flat 17 of the inner part 10 and the bottom surface 22 eing pushed. Due to their of Stab-bzw. Could be done to sheet form different geo ME trie with larger support surfaces here without an additional attachment at least at the stage-flat 17. In detail it acts with the various return springs in Fig. 12 around a steel feather/spring as Return spring 14j, in Fig. 13 around a cylinder feather/spring from POM as return spring 14k, in Fig. 14 around a foam material element as return spring 14l and in Fig. 15 around an TPE element as return spring 14m. Into the Fig. 16 and 17 again return springs 14l to 14m inserted rod-shaped in those, could equal if without the additional attachment at the lower stage-flat 17 of the interior 10 are partly done, the bottom and 14n, 14o ' the Rückstelle of the 14n, 14o in each case in a lower corner of the housing fixed is there here. For this the bottom and 14n', 14o' parallel to the side wall 24 of the housing 20 abge

<Desc/Cims PAGE NUMBER >

bent and in the housing corner between the side wall 24 and a bar 25 of the bottom surface 22 bent upward inward pushed in. The Befestigung this pushed in bottom end 14n', 14o' made there by with spielesweise sticking together or by a rest connection with that corresponding formed bar 25' of the bottom surface 22.

The invention is not only on the formations of the return spring shown in the represented embodiments as well as limited on the here described tablet donor. In particular regarding the form and size as well as the used material of the return spring a large on is fit at the size, formation and operation of the tablet donor and the required restoring force by the skilled person possible

<Desc/Cims PAGE NUMBER 10>

Reference symbol list 1 tablet donor 10 inner part 11 front surface 12 tablet underground storage 13 tablet output chute 14-14o return spring 14b/Steg at return spring 14b 14d'vorgewöltes central portion of the return spring 14d 14e', 14f'Schenkel of the return springs 14e, 14f 14g'Schenkel of the return spring 14h 14h'obere sprag of 14h 14n'unteres end of 14n 14o'bottom end of 14o 15'lateral wall of 13 16'lateral wall of the inner part. 10 opposite 15 17 lower stage-flat at the inner part 10 recess 15 18' 'projected edge of 18 19 bar to 15 20' 'housings 21 bottom opening 22 bottom surface 23 V-shaped recess 24 side wall of the housing 20 25 25' bar of the bottom surface 22 30 top surface